

YOUR ENERGY PATH FOR A DAY



Missouri
Department of
Natural Resources

GRADE LEVEL:

Upper Elementary/Middle
School
High School (with extensions)

SUBJECT AREA:

Sciences, Social Studies,
Communication Arts

DURATION:

Preparation time 15 minutes
(photocopies)
Activity time: one to two 50-
minute class sessions

SETTING: Classroom

SKILLS:

Application, Analysis

KEY WORDS: Energy,
Society, dependent

CORRELATIONS TO SHOW-ME STANDARDS:

Performance standards
1.10, 2.3 3.1 3.3 3.5 3.6 4.7

Knowledge Standards
SC-1,5,7,8
M-1

SUMMARY

Students will analyze the activities of a typical day and explore the energy required to achieve these events. The students will compare the changes in energy use through the years and analyze the level at which our daily routine is dependent on easy access to energy.

OBJECTIVES

THE STUDENT WILL:

- ✓ Create a list of all the ways they use energy over the course of a day.
- ✓ Compare and contrast daily energy use today with energy use in the past
- ✓ Analyze modern societies dependency on easy access to energy.

MATERIALS

- Copies of the energy activities worksheet.
- Research materials on alternative energy. (extension)
- Energy conservation Information. (extension)

BACKGROUND

“If one has cut, split, hauled, and piled his own good oak, and let his mind work the while, he will remember much about where the heat comes from, and with a wealth of detail denied to those who spend the weekend in town astride a radiator.”
-Aldo Leopold, 1949

It is only during the occasional power outage or gasoline shortage that we realize how important energy is to our everyday lives. Most of us take for granted the light bulb that comes on when we flip a switch. We assume our homes will be warm when it

is bitterly cold outside. We routinely fuel our cars and travel great distances. We easily cook and prepare our food without gathering wood for heat. Energy is involved in every part of our lives and yet most of the time we do not even notice its role.

Energy is an important part of modern life. Humans began manipulating energy sources thousands of years ago. We learned to control



our food supplies through agricultural practices, thus insuring our access to this form of energy. We harnessed energy in the form of fire for cooking our food, for generating warmth and to provide light at night. Winds were harnessed to move sailing ships across entire oceans.

With the advent of the modern industrial age our relationship with energy has become more sophisticated than ever. We are now very dependent on having easy



access to complex forms of energy every day. We use energy to drive to work, heat and cool our homes, cook and prepare our food, provide lighting needs, heat our water, and power most of our technology based tools (computers, televisions and more).

Our ability to control energy has changed our relationship to the earth. Easy access to energy allows us to routinely cover vast distances, live in very cold or hot climates, and process huge quantities of raw materials required to produce the myriad of products we use in our lives...***we live by manipulating energy.***

PROCEDURE

WARM UP

Set the stage by asking the students the following questions:

- *How often do you use energy in your daily life?*

- *How has energy use changed over the last 200 hundred years?*
- *How dependent are you on daily access to energy?*

A brief list of responses can be generated on the board. These questions can be revisited at the end of the activity, allowing the students to modify or expand their initial efforts.

IDENTIFICATION OF ENERGY RELATED ACTIVITIES

- Divide the class into five groups.
- Each group should create a list of all the ways they can think of that they use energy over the course of a typical day. (see worksheet)
- Next have the groups create a list of all the ways energy would have been used over the course of a typical day for a pioneer family* living in the Western Frontier in the 1800s.

**Note: You may wish to select another historical time frame that corresponds with material the students may have recently studied in your class or another class.*

- After the groups have generated their energy paths for modern day and an historical time frame then assign each group one of the following questions.
1. What were the most common uses of energy during a typical day?
 2. What are the main types of energy used by modern societies?
 3. What were the main sources of energy for pioneer families?
 4. How has access to energy changed our daily lives?
 5. How dependent are modern societies on daily access to energy?
- Each group should review their response to the assigned question with the rest of the class.

ASSESSMENT

Tell each student to imagine that they have been transported back in time and now are a modern child in a historical time frame.

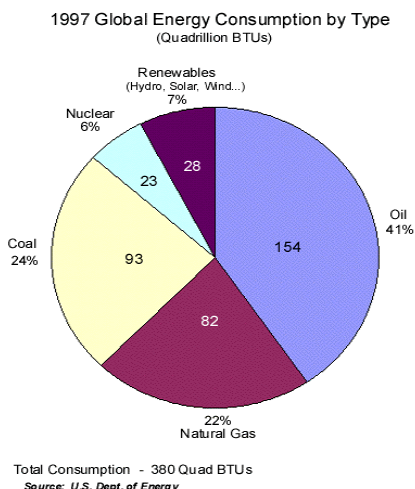
Have each student write an essay that describes how they would attempt to accomplish their modern energy related activities

during the historical time period assigned.

Example: How would they bathe...how to get the water, how to heat the water, how to obtain soap, etc.

EXTENSIONS

The majority of the energy used in the world today is obtained from fossil fuels (see chart). Over eighty percent of the electrical power used in Missouri is generated by burning coal. Most homes that do not use electric furnaces for heat (or hot water) meet these needs using natural gas. Our transportation system is almost exclusively dependent on fossil fuels. Fossil fuels were formed in the crust of the earth millions of years ago. Supplies of these fuels are limited and some sources predict we will begin to exhaust some of these resources fairly soon.



What other sources of energy could we use to replace fossil fuels?

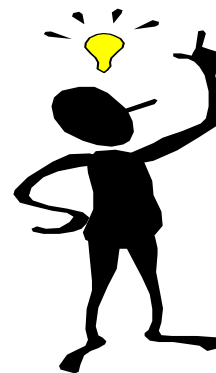
Have the class address the above question by assigning research projects on alternative energy sources to groups of students. The groups can present a brief report on their findings to the class.

Note: Information on hydropower, solar power, wind power, biomass energy, hydroelectric power, is presented in the Energy Producing Systems section of the curriculum.

GOING FURTHER

Energy Conservation:

Another way to find more energy is simply to use less energy!



Have students analyze their energy profile of a “typical day” for ways to reduce energy consumption and use energy more wisely.

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ENERGY ACTIVITIES LIST

INSTRUCTIONS: CREATE A LIST OF TYPICAL ENERGY RELATED ACTIVITIES FROM THE BEGINNING OF THE DAY UNTIL THE END.

MODERN DAY

PIONEER DAYS*

[illegible]

CONTINUE ON BACK IF NEEDED

* Hint: How was energy used to heat a home, generate light at night, provide transportation, generate hot water, etc?

[illegible]

YOUR ENERGY PATH FOR A DAY

QUESTION SHEET

1. What were the most common uses of energy during a typical day?

2. What are the main sources of energy used by modern societies?

3. What were the main sources of energy for pioneer families?

4. How has access to energy changed our daily lives?

5. How dependent are modern societies on daily access to energy?